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Boise Field Office
1249 South Vinnell Way, Suite 200
Boise, ID 83709-1663

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Mr. Tom Dyer
Bureau of Land Management
1387 South Vinnell Way
Boise, ID 83709

Dear Mr. Dyer:

Enclosed is BFO-PR-08-02, an evaluation of the Douglas-fir tussock moth outbreak on a variety of public and private ownerships near Ketchum and Hailey, Idaho, from 2005-2008. If you have any questions regarding this report, please contact Laura Moffitt at 373-4226, at the Forest Health Protection Boise Field Office.

For Forest Health Protection evaluations and trip reports on this or other topics, visit our Web site at: http://fsweb.r4.fs.fed.us/unit/spf/tripreports/bk_beetle.shtml. For more general information on Forest Health Protection programs and services, visit our combined Region 1 and 4 Web site at: http://www.fs.fed.us/r1-r4/spf/fhp/ or visit our national Forest Health Protection Web site at: http://www.fs.fed.us/foresthealth/.

Sincerely,

/s/ Dayle D. Bennett (for)
PAUL RIES
Director, State and Private Forestry

Enclosure

cc: Dayle D Bennett
Joy C Roberts
Laura L Moffitt
Jim Rineholt
Bill Josey, ArborCare
Kasey Prestwich, BLM
Mike DeArmond, BLM

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BFO-PR-08-02

Douglas-fir Tussock Moth Outbreak in the Greenhorn Gulch and Clear Creek Drainages Sawtooth National Forest, 2006 and 2007

Recap of 2006 Douglas-fir Tussock Moth outbreak evaluation in the Big Wood River Valley

At the request of Jim Rineholt (Forester, Sawtooth NF), Karl Fuelling (Forester, Sawtooth NF), Dayle Bennett (FHP Group Leader), Laura Moffitt (FHP Entomologist) and Bill Josey (Arborist, ArborCare Resources, Inc.) met with homeowners in the Greenhorn subdivision on August 2, 2006, to discuss Douglas-fir tussock moth (DFTM) defoliation in the Greenhorn Gulch watershed on the Smokey Mountains of the Ketchum Ranger District, and adjacent to private lands. Around 300 acres of defoliation was documented in the Greenhorn Gulch drainage during 2005 aerial detection surveys (Figure 1). Aerial detection survey flights were conducted over the Sawtooth National Recreation Area late August 2006. Over 2,000 total acres were mapped as defoliated by the DFTM on lands administered by private, BLM, state, and Forest Service (Figure 1). Severe to heavy defoliation of Douglas-fir (DF) was noted along Greenhorn Gulch, Clear Creek drainages, and a smaller area along Narrow Gauge drainage. Light defoliation was noted along Wolftone Creek drainage.

On September 24-26, 2006, Laura and David Beckman (Idaho Department of Lands Biological Technician) went to the Smokey Mountains to ground check the areas mapped as DFTM defoliation during the 2006 aerial detection survey and to collect egg masses along drainages where a portion of the defoliation was visible from the road, namely between Greenhorn Gulch and Clear Creek drainages. We did not find many new egg masses and noted that pupal cases were frequently parasitized. Collected egg masses were sent to a specialist in Canada who reared them over winter to determine the level of virus in the population. From that information, we could better predict when a tussock moth population will collapse. A total of 18 egg masses were collected from the defoliated areas and sent to Canada for rearing. Incidence of virus in larvae reared from these egg masses, along with parasitoid information, were determined spring 2007.

DFTM egg mass survey results, 2006, showed mortality of larvae due to natural enemies. Cooperators in Canada found that an average of 19 percent of the larvae that emerged from the egg masses died. Of those larvae, on average 30 percent were killed by parasitic wasps (*Trichogramma spp*. and *Telenomus californicus*) and 2 percent were killed by the NPV virus.

Visual assessment of the defoliated acres in Greenhorn Gulch drainage in 2007

We followed up on the outbreak in early summer 2007 by visually assessing the affected areas and trapping for adult male DFTM. Phil Mocettini, Jim Rineholt, and Laura visited the defoliated Greenhorn Gulch area on May 24, 2007, to visually evaluate the status of the defoliated acres in Greenhorn Gulch and Clear Creek drainages. We were particularly interested in determining the level of mortality caused by defoliation in 2006, especially for those areas along the ridgetops that experienced over 90 percent defoliation. There were a few scattered patches of 1-3 acres in size that might not recover. However, upon close inspection, even those trees that were heavily (100 percent) defoliated last year refoliated from 10-90 percent by early summer. Many of the trees should recover, but some may not. The intermediate age class had flushed out needles. There was moderate mortality of regeneration on the ridgetops. These stands could be thinned to increase vigor and resistance to Douglas-fir Beetle (DFB) and drought. If thinning treatments occur, care must be taken to remove the larger diameter slash (>16 inches diameter at breast height) to prevent DFB buildup. MCH, an antiaggregate pheromone, could be used to avoid unwanted mortality from potential future DFB activity in the Greenhorn Gulch area should it begin.

During the same field visit, we also assessed the level of DFB attacks in several DF that had blown down during the fall of 2006 along Clear Creek drainage (see the location of the DFB-infested trees in Figure

2). The concern was that DFB emerging from the blowdown would infest surrounding standing DF. Often Douglas-fir beetle will colonize the DF trees that have been heavily to severely defoliated. We did note DFB frass on three of the down DF. After close inspection of the surrounding DF, we found that DFB had infested trees on nearby private land. Jim Rineholt made recommendations to the landowner to quickly place MCH pouches in the area. Management of DFB in a generally forested area includes prompt detection and removal of infested trees prior to beetle flight mid to late spring.

Dayle Bennett, Jim Rineholt, and Bill Josey visited the Greenhorn Gulch outbreak area June 1, 2007, prior to attending a Greenhorn Gulch Homeowners meeting and site visit. Dayle was concurred with our earlier assessment that most trees were recovering from the defoliation event and that thinning treatments are a viable option to increase tree vigor and resistance to DFB and drought. Additionally, he thought that MCH deployment could be used to prevent DFB-caused mortality, should DFB activity increase in the area. Interestingly, Dayle noted moderate to light, scattered sawfly defoliation off of Imperial Gulch. However, there were no DFTM larvae or western spruce budworm in the area.

Aerial detection survey reports from 2007 recorded about 35 acres of DFTM defoliation in the outbreak area (Figure 1). No DFB-caused mortality was recorded along Greenhorn Gulch. However, one spot of 1-14 trees was recorded near Clear Creek drainage and about four spots of 1-14 trees were recorded near Baldy Mountain further north in the Ketchum area. Other DFB activity occurred on public lands west of the outbreak area of concern.

Trapping DFTM in 2007

DFTM traps are baited with a synthetic pheromone of the adult female and placed at the end of June and retrieved at the end of September. The male moths are attracted to the pheromone on the lure. They fly into the sticky-coated trap, get caught there, and die. Traps draw males from up to 2 miles away. The traps capture male tussock moths in late summer and early fall during the mating season. The number of moths caught is an indication of the number of larvae that will be present the following spring and the subsequent potential for defoliation. An average trap catch of 25 moths or more can indicate that the local population is approaching the outbreak stage. The male moth capture rate of an average of 25 or more males per trap indicates a larval population the following summer of two or more early (first and second) instar larvae per 1,000 square inches of foliage. A population of 20 or more early instar larvae will result in visible defoliation the following year. Average captures of 25 or more male moths indicate potential visible defoliation within the next two summer seasons.

We selected three locations around the 2006 defoliated area to place DFTM traps with each location consisting of five DFTM traps. One trap location was on the edge of the defoliated acres of the Greenhorn Gulch area where the 2006 defoliation levels were low. Another was further west along Wolftone Creek where defoliation was extremely light to absent in 2006. The third location was on Baldy Mountain, within a mile of 2006 recorded defoliation and adjacent to Sun Valley Resort. Moths were caught in all three of the trap locations and the highest average trap catch was nine moths (Figure 2).

Based on the visual observations in 2006 and 2007, the egg mass rearing data and trap catches, we believe the current outbreak on the Sawtooth NF and adjacent lands is over and do not expect much DFTM defoliation over the next several years. However, we will continue to trap for DFTM at the three aforementioned established locations.

Figure 1. Douglas-fir tussock moth outbreak area, 2005-2007, on Sawtooth NF, BLM, state, and private lands.

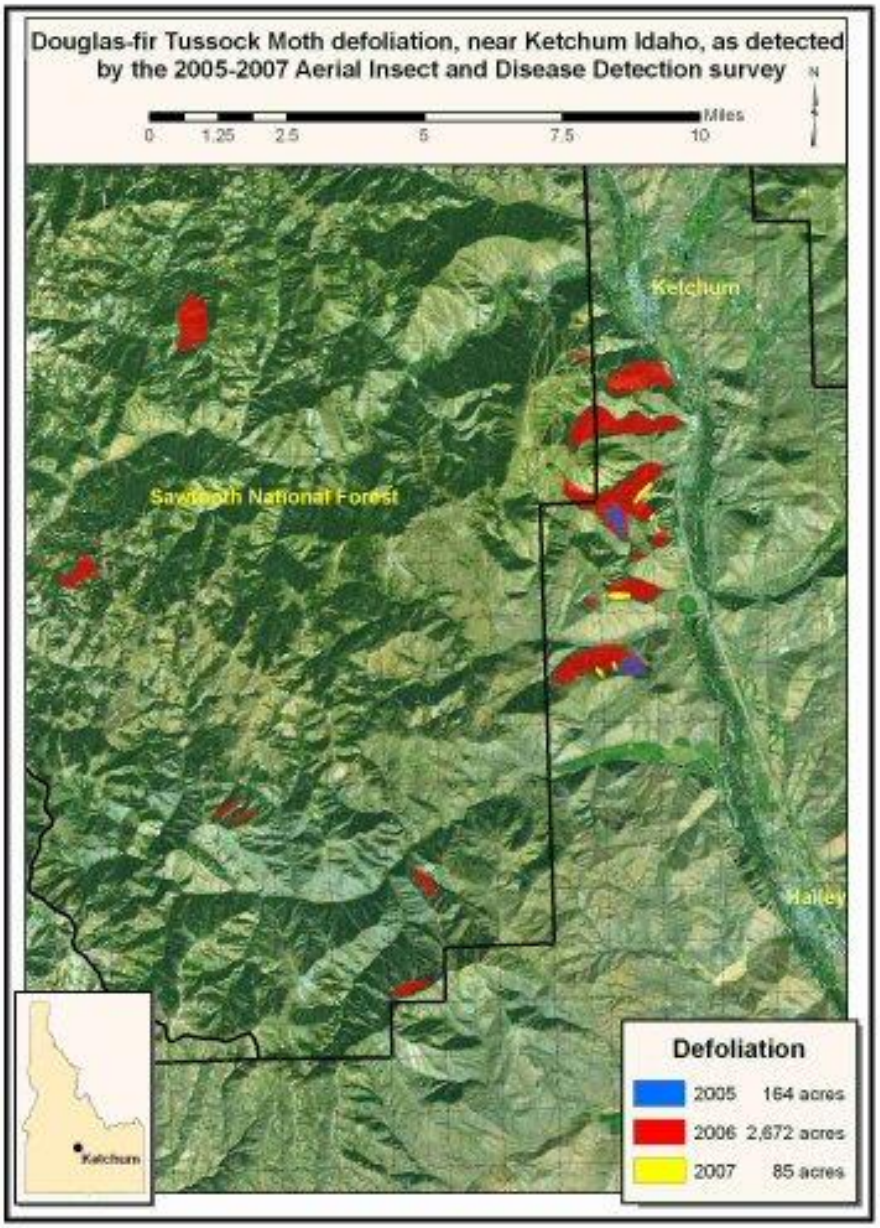
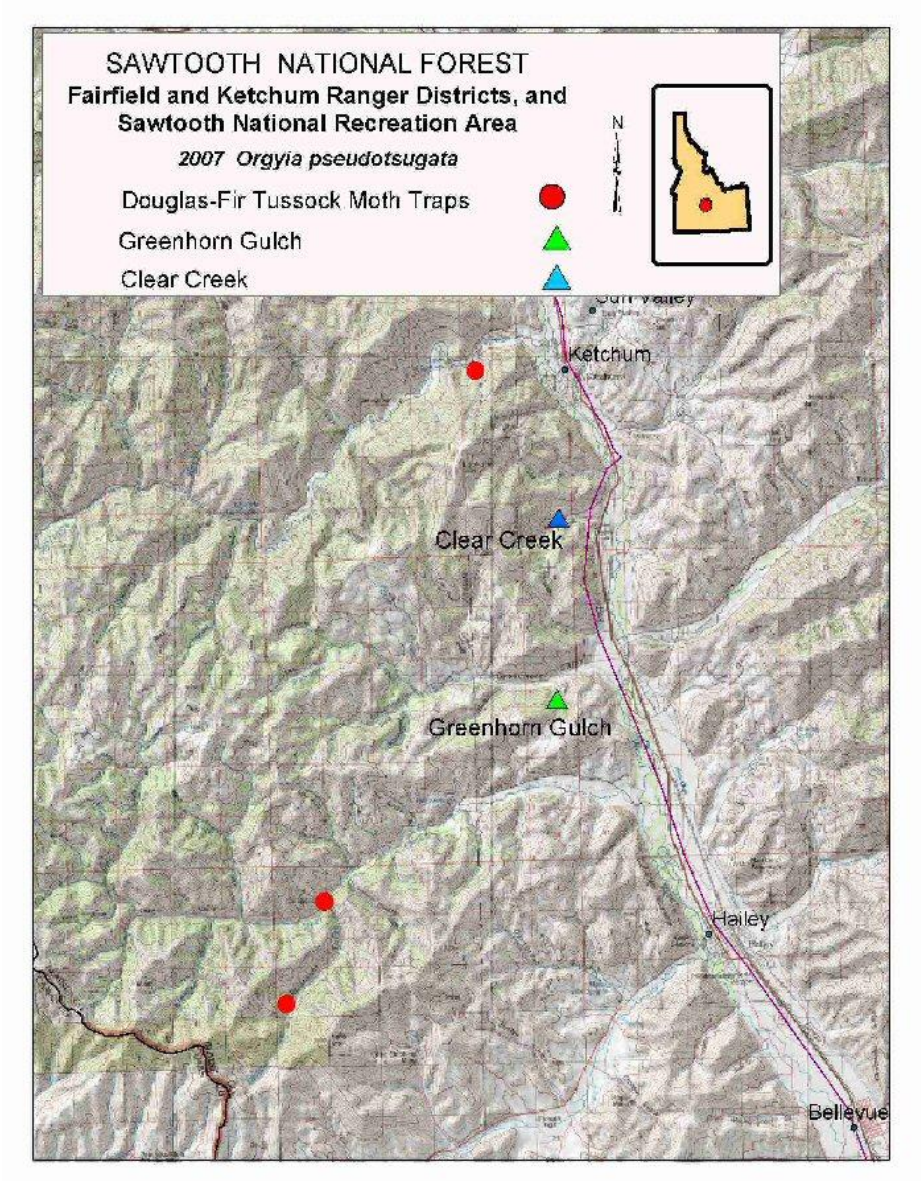


Figure 2. Douglas-fir tussock moth trap location in 2007. Greenhorn gulch is the center of the DFTM outbreak. During the fall of 2006, several Douglas-fir trees were blown down along Clear Creek drainage.



Laura Lazarus Moffitt, Forest Entomologist
USFS Forest Health Protection Region 4
1249 South Vinnell Way, Suite 200
Boise, ID 83709
208-373-4226 (office)
E-mail: lmoffitt@fs.fed.us

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